WHAT IS CLAIMED IS:

1. An *in vitro* method for screening agents inducing islet cell neogenesis or duct-to-islet cell transdifferentiation, which comprises the steps of:

a) expanding *in vitro* cells of a duct-like structure obtained by inducing cystic formation in cells in or associated with post-natal islets of Langerhans;

b) treating said expanded cells of said duct-like structure with an agent being screened; and

c) determining potency of said agent of inducing islet cell differentiation of said duct-like structure in becoming insulin-producing cells.

2. The method of claim 1, wherein step a) and step b) are concurrently effected using a solid matrix, basal feeding medium and appropriate growth factors to permit the development, maintenance and expansion of a dedifferentiated cell population with at least bipotentiality.

3. The method of claim 2, wherein said solid matrix is 3-D collagen type-1 gel matrix, said basal liquid medium is DMEM/F12 medium supplemented with EGF and cholera toxin.

4. The method of claim 1, wherein said cells are human cells.

5. A kit for carrying out the method of claim 1, which comprises:

a) a solid matrix for 3-D culture of cells;

b) a culture medium supplemented.

6. The kit of claim 8, wherein sais solid matrix is 3-D collagen type-1 gel matrix and said medium is DMEM/F12 medium supplemented with EGF and cholera toxin.

7. The kit of claim 8, which further comprises duct-like structure cells or islet cells to be transformed into duct-like structure cells.

8. An islet cell culture, which comprises insulin-producing islet cells in a suitable culture medium, wherein said islet cells are characterized.

9. The islet cell culture of claim 8, wherein said characterization is genetic, immunologic or genomic.

10. The islet cell culture of claim 9, wherein said characterization is effected using a DNA microarray analysis.

11. An *in vitro* method for evaluating biological effects of agents on islet cells, which comprises the steps of:

a) treating the islet cell culture of any one of claims 8 to 10 with an agent being evaluated for a time sufficient for a biological effect to be occurring; and

b) determining biological effect of said agent on islet cells by monitoring changes in insulin production compared to a standard curve obtained with a control islet cell culture.

12. The method of claim 11, wherein said agent is selected from the group consisting of immunosuppressive agents, growth factors and anti-apoptotic agents.